

Girish Kulkarni

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Research Interests: Cosmology, extragalactic astronomy, intergalactic medium, reionization, quasar absorption lines, first stars, high-redshift galaxies, supermassive black holes, active galactic nuclei, cosmological simulations

Employment

Tata Institute of Fundamental Research , Mumbai, India Reader, Department of Theoretical Physics	2018–
University of Cambridge , Cambridge, UK Postdoctoral Research Associate, Institute of Astronomy and Kavli Institute of Cosmology	2014–2018
Max Planck Institute of Astronomy , Heidelberg, Germany Postdoctoral Researcher, Galaxies and Cosmology Division	2011–2014
Harvard University , Cambridge, Massachusetts, USA Fulbright-Nehru Doctoral and Professional Research Fellow, Institute of Theory and Computation	2010–2011

Education

Harish-Chandra Research Institute , Allahabad (now Prayagraj), India PhD Physics Thesis submitted: July 2011; PhD Date: April 2012; Supervisor: Prof. Jasjeet S. Bagla Thesis title: ‘Evolution of Galaxies and the Intergalactic Medium at High Redshift’	2007–2011
MSc Physics	2004–2007
University of Pune , Pune, India BSc Physics	2001–2004

Selected Grants and Awards

James Webb Space Telescope (as co-I; 384 hours)	2024
DAE-STFC Technology and Skills Programme (as co-I; £1.3 million plus Indian equivalent)	2023
DiRAC Consortium UK (as co-I; 23.6 million CPU hours and 120,000 GPU hours)	2023
Very Large Telescope (as co-I; 147 hours)	2023
Hubble Space Telescope (as co-I; 20 orbits)	2022
Swiss National Supercomputing Centre (as PI; 220,000 node hours)	2021–2022
James Webb Space Telescope (as co-I; 65.4 hours)	2020–2021
Swiss National Supercomputing Centre (as PI; 180,000 node hours)	2020–2021
DiRAC Consortium UK (as co-I; 30 million CPU hours and 360,000 GPU hours)	2020
TIFR Start-Up Grant (as PI; 2.5 crore rupees)	2020–2023
Max Planck Partner Group Grant (as PI; 200,000 Euros)	2019–2024
Very Large Telescope (as co-I; 250 hours)	2018
Partnership for Advanced Computing in Europe (PRACE; as co-I; 20 million CPU hours)	2018
Astronomical Society of India’s Young Astronomer of the Year Award	2013
Fulbright-Nehru Doctoral and Professional Research Fellowship	2010–2011
KVPY National Science Fellowship	2000–2004

Talks

Over 95 invited and contributed talks. Full list available upon request.

Research Supervision

PhD students: Jahaan Thakkar (TIFR, Reionization, 2024–), Pooja Rani (TIFR, Cosmic Dawn, 2024–), Vibin Narayanan (TIFR, Quasars, 2023–), Shikhar Mittal (TIFR, Cosmic Dawn, 2020–), Nabendu Kumar Khan (TIFR, Lyman- α Forest, 2020–), Sindhu Satyavolu (TIFR, Quasars, 2020–).

Postdocs: Tomáš Šoltinský (TIFR, Intergalactic Medium, 2023–), Janakee Raste (TIFR, Reionization, 2019–22; now postdoc at NCRA).

Undergraduate, Master’s, and short-term students: Krishna Vijayan (IISER Berhampur, Quasars, 2024-25), Sameer Patil (TIFR, 2024–25), Sooryabalan Murugesan (TIFR, Quasars, 2024-25), Shikhar Asthana (IIT Kharagpur, Reionization, 2020–21; now PhD student at Cambridge), Yash Sharma (TIFR, Intergalactic Medium, 2019–20; now PhD student at MPIA), Mohit Saharan (TIFR, Intensity Mapping, 2019–20; now PhD student at Radboud), Sreetra Roy (Mumbai University, Reionization, 2019–20; now PhD student at Warsaw), Joris Witstok (MAst, Cambridge University, Intergalactic Medium, 2017–18; now postdoc at Cambridge), Sebastian Dumitru (Natural Sciences Tripos Part III, Cambridge, Intensity Mapping, 2016–17), Fred Tomlinson (Summer Student, Cambridge, Reionization, 2016).

Recent Teaching

Numerical Methods (2023, 2019), Computational Physics (2024, 2022, 2020), Mathematical Methods of Physics (2019) for first-year PhD students in TIFR’s graduate school.

Collaborations and Memberships

Vera C. Rubin Observatory: Programme Manager for TIFR’s in-kind contribution to the LSST.

Thirty Metre Telescope: Member, since March 2023, of International Science Development Teams for (a) Fundamental Physics and Cosmology, (b) Supermassive Black Holes, and (c) Early Universe, Galaxy Formation and the Intergalactic Medium

Square Kilometre Array Organization: member of the Epoch of Reionization working group since 2021

Builder member in REACH since 2019. Member of multiple collaborative projects on HST, JWST, and VLT.

International Astronomical Union: Member since May 2023

Astronomical Society of India: Life member since 2012

Recent Service

Peer Review: Editor for Journal of Subatomic Particles and Cosmology. Referee for Nature, Nature Astronomy, ApJ, MNRAS, Advances in Astronomy, Research in Astronomy and Astrophysics, Physics of the Dark Universe, OJA. Proposal Referee for Subaru, JWST, HST, GMRT. Funding Proposal Referee for Israel Science Foundation, Swiss National Science Foundation, UK’s Science and Technology Facilities Council, and Netherlands Organisation for Scientific Research.

Examination: PhD examiner for Stockholm University (2024), University of Melbourne (2024), Indian Institute of Astrophysics (2024), Presidency University (2023), IUCAA (2022), Indian Institute of Science (2019) and Swinburne University (2019). Selection panel member for Fulbright-Nehru Fellowships 2020. Member of multiple interview committees for PhD student, postdoc, and faculty member recruitment in TIFR.

Administration: Member of the 19-member Subject Board of Physics (SBP) in TIFR from 2019 to 2023 to run and monitor TIFR’s graduate programme in physics. Member of the 11-member committee overseeing the TIFR Computer Centre and Communication Facility (CCCCF) to provide computing and communications services to the whole TIFR campus in Mumbai. Steering committee member for TIFR’s Laboratory of Interdisciplinary Breakthrough Science.

Organisation: SOC member for school and workshop titled ‘Largest Cosmological Surveys and Big Data Science’ (2023), and the ‘Advanced 21-cm Cosmology School and Workshop’ (2023).

Publications

As of July 2024, I have co-authored 62 peer-reviewed publications. According to the Astrophysics Data System (ADS), my publications have been cited 2,419 times, with an h-index of 27. Full list available upon request.

References

Available upon request.